

### **REMARKS**

Claims 18 to 34 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Claim 34 was objected to because of informalities. Claims 18 to 23, 25 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,579,311 to McCoy (hereinafter "McCoy") in view of U.S. Patent No. 4,643,873 to Hayes (hereinafter "Hayes"). Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes, and further in view of U.S. Patent No. 4,284,593 to Sutcliffe (hereinafter "Sutcliffe"). Claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes and further in view of U.S. Patent No. 5,238,304 to Zimmerman (hereinafter "Zimmerman"). Claims 27 to 31 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes and Zimmerman and further in view of U.S. Patent No. 3,995,000 to Butler et al. (hereinafter "Butler") and JP Publication 04279895 to Une (hereinafter "Une"). Claims 32 and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes and further in view of U.S. Patent No. 5,841,200 to Bauer (hereinafter "Bauer") and U.S. Publication No. 2006/0188053 to Vandergheyst (hereinafter "Vanderghceyst").

Claims 18, 20 to 22, 27, 28 and 34 are hereby amended to more clearly and particularly point out the invention.

Reconsideration of the application based on the foregoing amendments and the following remarks is respectfully requested.

#### **35 U.S.C. §112 Rejections**

Claims 18 to 34 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Office Action asserts that "[t]he method step of specifically not sieving before shaping is not disclosed by Applicant and furthermore the concept of a binder, present or not, is not disclosed by the specification."

First, it is noted that it is the Examiner's burden for proving that the written description requirement is met. See MPEP 2163.04.

Second, the “subject matter of the claim need not be described literally (i.e. using the same terms or *in haec verba*) in order for the disclosure to satisfy the written description requirement.” MPEP 2163.02.

The proper standard for complying with the written description requirement is that the specification must *reasonably* convey to one of skill in the art that the inventor, at the time the application was filed, had possession of the claimed invention. MPEP 2163 I.

It is respectfully submitted that a fair reading of the specification shows that the specification clearly complies with the written description requirement and provides sufficient detail that one skilled in the art could have reasonably concluded that the inventor had possession of the claimed invention.” (MPEP 2163 I). The specification discloses the problems with the prior art, particularly the “main risk is the failure of the sieve at the granulator outlet.” (Substitute Specification page 3, lines 14 to 26). The specification proceeds to point out that the conventional grinding techniques are “complex and give rise to some hazard, given that the wires of the sieves used may fail.” (Substitute Specification page 4, line 31 to page 5, line 2). The specification is clear to point out that the prior art processes are complex and “require many stages for conditioning the UO<sub>2</sub> powder and for mixing it with additives.” (Substitute Specification page 5, lines 14 to 16). The specification discloses the objective of the present invention is to provide a process through which operations required to obtain a granular material can be simplified from the prior art. Furthermore, the specification teaches “go[ing] to a single compression and mixing operation.” (Substitute Specification page 8, lines 25 to 31). In addition, “the process according to the invention ... comprises only a single stage (or at most two stages if a lubrication stage by ‘soft’ mixture is taken into account) to pass from uranium oxide powder obtained by a uranium hexafluoride conversion process to a particulate material which can be shaped into raw pellets, instead of the seven stages in the case of the prior process.” (Substitute Specification page 22, lines 22 to 27).

Through reading the specification which discloses the problems with the prior art, discloses the objective of the present invention, provides examples of the present invention and teaches the simplification of the present invention in comparison to the prior art, it would

have been well understood to one of skill in the art that “the particulate material is not sieved before shaping.”

With further regard to “no binder is added,” the specification teaches the addition of additives and lubricants. (Substitute Specification page 7, line 21 to page 8, line 4). It would have been clear to one of skill in the art reading the specification that no binder was intended to be added, as the specification would have clearly taught such a step. The objective of the present invention is to simplify the complex stages of the prior art. Also, taught in the specification by Examples 1, 2 and 3, lubricants have been added, but the specification does not teach adding binder material. Based on the reading of the specification this would have been clear to one of skill in the art that the inventor possessed this limitation.

***Finally, each of the Examples in the specification discusses in detail the process, and does not mention sieving or binders. It is thus clear that the Applicant had possession of a process in which no sieving or binders were used.*** This alone is sufficient to reasonably convey to one of skill in the art that the inventor had possession of the claimed process. *See MPEP 2163 II 3(a) (“possession may be shown by describing an actual reduction to practice of the claimed invention” and “a specification may describe an actual reduction to practice by showing that the inventor ...performed a process that met all of the limitations of the claim...”)*. It is respectfully submitted that a fair reading of each of the detailed and complete Examples shows that no sieving or binders were used.

Withdrawal of the rejection of claims 18 to 34 under 35 U.S.C. §112 is respectfully requested.

#### Claim Objections

Claim 34 was objected to because of informalities.

Claim 34 has been amended per the Examiner’s suggestion. Applicant’s thank the Examiner for pointing this out.

Withdrawal of the objection to claim 34 is respectfully requested.

35 U.S.C. §103 Rejections

Claims 18 to 23, 25 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes.

McCoy discloses a method and apparatus “comprising steps of hydrolyzing uranium hexafluoride to form an aqueous uranyl fluoride solution, treating with ammonia to precipitate ammonium diuranate, dewatering and drying the precipitate to form uranium dioxide.” (Col. 1, lines 15 to 20).

Hayes discloses “uranium dioxide powder [which is] produced by a gas phase process in which uranium hexafluoride is reacted with dry steam and then with steam and/or hydrogen at a higher temperature is subjected to intense mechanical attrition to increase its packing density, the treated powder is mixed with a limited quantity of binder to produce free flowing particles which, following optional spheroidising by tumbling, are formed into pellets comprising uranium dioxide, and finally the pellets are sintered.” (Col 1, lines 48 to 56).

Claim 18 is hereby amended to recite “[a] process for manufacture of nuclear fuel pellets through sintering of a material containing uranium dioxide  $\text{UO}_2$  obtained from a powder originating from a process for a dry route conversion of uranium hexafluoride  $\text{UF}_6$  comprising:

- obtaining the powder directly by the  $\text{UF}_6$  hexafluoride dry route conversion process;
- placing the powder in a vessel containing moving, compressing and mixing bodies;
- agitating the vessel such that the powder moves within a volume of the vessel in three noncoplanar axes to be compressed between moving bodies and walls of the vessel to form a particulate material having a density in an uncompacted state of at least  $1.7 \text{ g/cm}^3$ ; and
- shaping the particulate material obtained by agitation in the vessel into raw fuel pellets that undergo sintering

wherein the particulate material is not sieved before shaping and no binder is added to the powder of the particulate material before the shaping.”

McCoy fails to teach or show “obtaining the powder directly by the  $\text{UF}_6$  hexafluoride dry route conversion process,” (emphasis added) and “agitating the vessel such that the powder moves within a volume of the vessel in three noncoplanar axes to be compressed

between moving bodies and walls of the vessel to form a particulate material having a density in an uncompacted state of at least 1.7 g/cm<sup>3</sup> as required by claim 18.

Hayes fails to teach or show “wherein the particulate material is not sieved before shaping and no binder is added to the powder of the particulate material before shaping” as required by claim 18. Hayes clearly states that “improved green pellet integrity can be achieved (when compared with green pellets produced by the binderless route) with binder quantities less than 1% by weight.” This is evidenced by the examples provided in Hayes which performs a sieving step. For example, “the contents of the drum are then sieved to separate the milled uranium dioxide powder.” (Col. 3, lines 36 to 38).

Moreover, McCoy discloses a process in which the uranium dioxide is obtained by a wet route process and Hayes discloses a process in which the uranium dioxide is obtained by a dry route process. The specification states that “[i]t is increasingly desired that wet route processes should be replaced by dry route processes for reasons associated with safety and environment.” (Substitute Specification page 4, lines 2 to 4). Dry route conversion and wet route conversion require different processing steps and one of skill in the art would not look to the teachings of a dry conversion process to modify the teachings of a wet route process because they are not compatible. Therefore there is no reason or motivation of one of skill in the art to modify McCoy in view of Hayes, especially in view of the present amendment to claim 18.

Since neither McCoy nor Hayes each meet the limitations of claim 18, and there is no reason to combine these references, withdrawal of the rejections to claims 18 to 23, 25 and 26 under §103(a) is respectfully requested.

Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes, and further in view of Sutcliffe.

Claim 19 is dependent on claim 18. In light of the discussion regarding claim 18 withdrawal of the rejection of claim 19 is respectfully requested.

Claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes and further in view of Zimmerman.

Claim 24 is indirectly dependent on claim 18. In light of the discussion regarding claim 18 withdrawal of the rejection of claim 24 is respectfully requested.

Claims 27 to 31 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes and Zimmerman and further in view of hereinafter Butler and Une.

Claims 27 and 33 are directly dependent on claim 18 and claims 28 to 31 are indirectly dependent on claim 18. In light of the discussion above with respect to claim 18 withdrawal of the rejection of claims 27 to 31 and 33 is respectfully requested.

Claims 32 and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over McCoy in view of Hayes and further in view of Bauer and Vandergheyst.

Claim 32 is directly dependent on claim 18 and claim 34 is indirectly dependent on claim 18. In light of the discussion above with respect to claim 18 withdrawal of the rejection of claims 32 and 34 is respectfully requested.

**CONCLUSION**


It is respectfully submitted that the application is in condition for allowance and applicants respectfully request such action.

If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

Respectfully submitted,

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